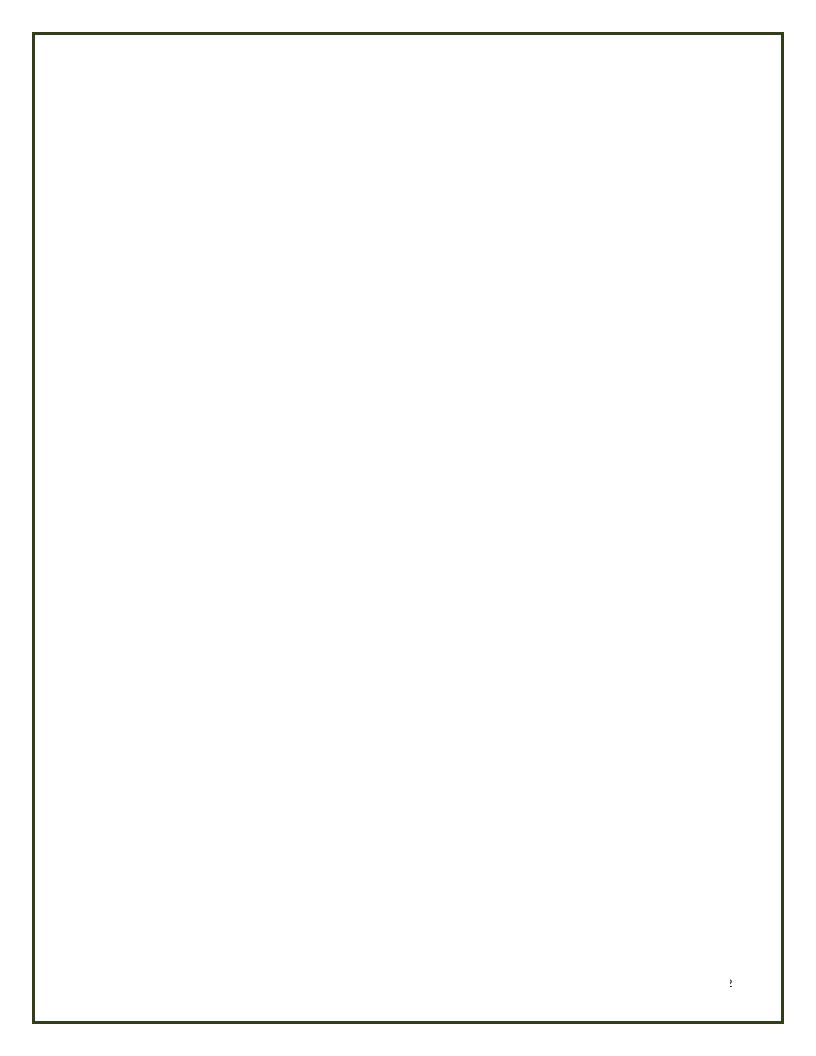
John James Audubon

American Naturalist



The life and work of John James Audubon Education Resource

John James Audubon Collection Louisiana's Old State Capitol Museum of Political History



John James Audubon, American Naturalist

The life and work of John James Audubon

This K-12 thematic unit examines the life and work of John James Audubon

This publication is developed and produced by the Secretary of State's Museum Division Education Department



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John James Audubon, American Naturalist

Educator Notes

Overview

This standards-based, thematic classroom resource introduces students to one of America's most famous nineteenth century naturalists, John James Audubon.

An introductory essay presents an overview of Audubon's life and artistic style, while a variety of cross-curricular activities provides unique opportunities for students to explore Audubon's art, math and science. All activities focus on developing critical thinking, observation and writing skills across the curriculum. The Louisiana Content Standards for each of the activities are listed on page 31. Each activity can be adapted easily to meet the needs of individual students and/or classes.

This publication is based on the John James Audubon Collection, which belongs to Louisiana's Old State Capitol Museum of Political History. However, the activities can be used to provide insight into any museum and/or Internet exhibit of Audubon prints. We recommend the Louisiana State University, Special Collections' John James Audubon in Louisiana digital collection, which is available on the Internet from the LOUISiana Digital Library at http://louisdl.louislibraries.org.

Louisiana's Old State Capitol Museum of Political History Audubon Collection

Havell Edition, circa 1826-1838
The Birds of America

Hand-colored Aquatint Engravings

Double Elephant Folio

24" x 36"

Plates

Plate: 12 Baltimore Oriole

Plate: 37 Gold-winged Woodpecker

Plate: 86 Black Warrior Plate: 87 Florida Jay

Plate: 96 Columbia Magpie or Jay

These Audubon prints were donated to Louisiana's historic statehouse by Julia Fremin and Brent Wood on behalf of the Chevron Corporation



John James Audubon, American Naturalist

John James Audubon, one of the most famous nineteenth century American ornithologists and naturalists, is known for both his romantic life and the beautiful watercolor prints he created. Audubon's most famous publication, <u>The Birds of America</u>, is a book containing 435 life-size images—portraits of every bird then known in the United States.

Early Life

John James Audubon was born Jean Rabin on the island of San Domingue in 1785. His father was Jean Audubon, a French merchant and privateer, and his mother was Jeanne Rabin, a Creole chambermaid from Louisiana. His father helped the Americans during the American Revolution and was present when British General Cornwallis' forces surrendered to General George Washington at the Battle of Yorktown in 1781. Jean's mother died when he was very young. In 1788, a slave rebellion on San Domingue forced his father was to sell his West Indies holdings and return to France with his young son and daughter. In 1789, four-year-old Jean was formally adopted by his father and stepmother, Anne Moynet, and given the name Jean-Jacques Fougère Audubon.

In 1803, Jean-Jacques departed France to escape Napoleon's military draft and to manage his father's Pennsylvania plantation. On the voyage to America, he changed his name to John James Audubon. Weeks later, he arrived in New York, a dashing young man "of fair mien and quite a handsome figure" (Audubon and Audubon, 1869). At his father's estate in Pennsylvania, Audubon spent much time observing and studying birds. In 1808, he fell in love with and married a neighbor, Lucy Bakewell.

Between 1808 and 1820 Audubon lived mostly in Kentucky, frequently changing his occupation and neglecting his businesses to explore the wilderness and sketch different species of birds. Unable to support his family, he began painting portraits for a livelihood and traveled to New Orleans where he taught drawing. In 1821, he spent four months at the Oakley Plantation in St. Francisville, Louisiana. During this time, his wife conducted a private school in West Feliciana parish.

Self-Taught Artist and Scientist

Audubon, a self-taught artist and scientist, studied the migrating phoebes (a small songbird whose whistled notes sound like "fee-bee"), tying colored yarn to their legs. Over time, Audubon documented their feeding habits and migratory patterns by recording the number of times he saw each bird's colored band. This was the first recorded instance of banding birds (Streshinsky, 1993).

Audubon produced his original watercolor paintings using a variety of papers and painting materials, including adhesives, glazes, pastels, graphite, oil paint, egg white and chalk.

Unlike the still life produced by other artists of his time, Audubon filled his paintings with action. Each carefully produced painting presented a dramatic scene in the life of the subject.

Having studied drawing for a short while in my youth under good masters, I felt a great desire to make choice of a style more particularly adapted to the imitation of feathers than the drawings in water colours that I had been in the habit of seeing, and moreover, to complete a collection not only valuable to the scientific class, but pleasing to every person, by adopting a different course of representation from the mere profile-like cut figures, given usually in works of that kind [. . .] nothing, after all, could ever answer my enthusiastic desires to represent nature, except to copy her in her own way, alive and moving (Audubon and Audubon, 1869)!



Pheasant's Eye, from "Selby's Fly Catcher" by J. J. Audubon, 1821

Reproduced courtesy of Louisiana State University, Special Collections

Audubon studied his subjects in their natural surroundings and included their habitat in his paintings. To reproduce his subjects faithfully, Audubon inserted wires in freshly killed birds and posed them in lifelike postures. He placed these models in front of a grid background, so as to draw them accurately to scale.

As I wandered, mostly bent on the study of birds, and with a wish to represent all of those found in our woods, to the best of my powers, I gradually became acquainted with their forms and habits, and the use of my wires was improved by constant practice (Audubon and Audubon, 1869).

In addition to sketching the birds, Audubon studied their habits and kept a field journal in which he recorded detailed notes about the behavior and habitat. He used this research to write the book Ornithological Biography, which is about bird behavior and habitats.



The Birds of America

Unable to find an American publisher for his work, Audubon traveled to Great Britain in 1826. There, the handsome backwoodsman with his picturesque frontier dress and hundreds of watercolor paintings of exotic birds became a sensation. Audubon soon persuaded William Lizars of Edinburgh, England, to produce a book containing prints of his original paintings. After completing only ten etchings, Lizars' colorists went on strike, and Audubon was forced to find another publisher. Between 1827 and 1838, Audubon worked with English engraver and printer Robert Havell to publish a series of 435 hand-colored prints in a book entitled The Birds of America.

Columbia Magpie or Jay

Courtesy of Louisiana's Old State Capitol Museum of Political History

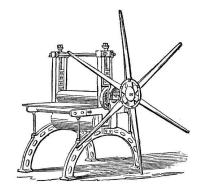
"Double Elephant" Folios

Master engraver Robert Havell used a print making method called aquatint to produce Audubon's Birds of America. Havell began the process by using precision tools to etch, or engrave,

a reverse image of each watercolor painting onto copper plates. The largest copper plate available to printers was approximately 27 inches wide and 39 inches in length. Since Audubon portrayed each bird life size, the larger birds often had to be drawn in unusual positions to fit on the largest copper engraving plates then available. The largest bird print was of the wild turkey cock; the smallest print was of a hummingbird.

[. . .] the paper is of unusual size, called 'double elephant', and the plates are to be finished in such superb style as to eclipse all of the same kind in existence (Audubon and Audubon, 1869).

Once engraved, the copper plates were inked, and dampened paper was placed upon them. Havell used a copper plate press to transfer the image to the paper. The paper was then removed carefully from the plate. The resulting print was a black and white image of the original painting. Each thin copper plate could produce up to 200 prints before the plate became too worn to use.



Copper plate, or rolling, press, 1853

An assembly line team of up to 40 colorists, each with their own color, used Audubon's original paintings and field notes to hand color the black and white prints. These printed and hand-colored pages are referred to as Audubon's originals and are called Havells. These prints are known as the Audubon-Havell double elephant folio edition because each image was printed on a giant "double elephant" sheet of 100% cotton paper. The originals

were then bound together into a collection called <u>The Birds of America</u>. Over the years, some books were unbound and individual prints were sold or framed.

Royal Octavo Edition

Before Audubon and Havell completed the first edition of <u>The Birds of America</u>, Audubon began to work on a smaller version of his publication. This smaller book, called the royal octavo edition, was published in New York and Philadelphia in 1840-1844. It was so popular that it was reissued seven times.

The royal octavo prints are small replicas of the original paintings; however, the backgrounds are often simplified and only one species is engraved on each plate. The octavo edition also includes new species of birds and plants. Octavo refers to the size of the paper used by the printer--about 1/8 the size of a normal folio, or about 6.5 x 10.5 inches. To produce the octavo prints, each large sheet of paper was folded in half three times to produce eight pages. The pages were then bound and trimmed. Audubon referred to the octavo edition as the "Birds in Miniature."



"Gold-Winged Woodpecker"

Courtesy of Louisiana's Old State Capitol Museum of Political History

The miniature prints were produced by John T. Bowen who used the stone lithograph method of print. Stone lithography involves using a series of hand carved plates, which are usually made from limestone or marble. Usually, each of the stone plates is used to print only one color. To produce a miniature print, Bowen used a prism to project a small reverse image of the original Audubon painting onto a small stone plate. The plate was inked and used to produce a black and white print. As with the double elephant prints, each print in the octavo edition was hand-colored. Less than 2,000 sets of the miniatures were produced for the first royal octavo edition.

John James Audubon died in 1851. Because of the continued strong demand for his prints, a second edition of Audubon's work was begun in 1860 in New York. When the Civil War erupted in 1861, the publishers abandoned work on the second edition. As a result, these prints are even rarer than those of the first edition.

Although some of Audubon's work is not scientifically accurate, he is considered one of the first naturalists in America. The Audubon Society, focusing on wildlife and the natural environment, was established in 1886 by George Bird Grinnell, a former pupil of Lucy Audubon. The society was named after Audubon to honor his work and his commitment to nature.

John James Audubon in American History

Audubon's life spanned one of the most remarkable periods of American history. Arriving in America in 1803, Audubon witnessed many significant events that shaped the young United States, including the Louisiana Purchase and the War of 1812. Through his journeys, Audubon was fortunate to meet many of the men who shaped this period of American history including:

- American artists Titian and Rembrandt Peale as well as John Vanderlyn, Thomas Sully and Thomas Cole, the founder of the Hudson River School of art
- American presidents James Monroe, Andrew Jackson and Martin van Buren
- Thomas Nuttall, one of the most adventurous of the early American naturalists
- Revolutionary War hero George Rogers Clark
- William Clark and Toussaint Charbonneau, famed explorers of the Louisiana Territory
- Red Jacket, Seneca chief and orator to whom President George Washington awarded the Medal of Honor
- Washington Irving, an American author best known for his short stories "The Legend of Sleepy Hollow" and "Rip Van Winkle"
- Sam Houston, President of the Texas Republic
- Bernard de Marigny, whose New Orleans home was used as Andrew Jackson's headquarters in 1814
- English author Sir Walter Scott, whose novels, according to Mark Twain, shaped Southern antebellum culture and "made every gentleman in the South a Major or a Colonel, or a General or a Judge"



"John J. Audubon: from the original painting by Chappel"

American Historical Portraits, William E. Barton Collection of Lincolniana, Special Collections Research Center, University of Chicago Library

Permission to reprint for educational purposes granted by University of Chicago Library

John James Audubon Timeline

| 1785 | Born in San Domingue (later Haiti) to Captain Jean Audubon and Jeanne Rabine |
|-----------|---|
| 1803 | Leaves France for the United States to avoid being drafted into Napoleon's army; moves to Mill Grove, his father's estate in Pennsylvania |
| 1804 | Meets and falls in love with Lucy Bakewell, daughter William Bakewell; creates wire constructions that help him pose dead birds in lifelike positions in order paint them |
| 1807-1821 | Pennsylvania and Kentucky-based business ventures fail; explores the wilderness, creating watercolor prints about birds in their natural environment; marries Lucy Bakewell; fathers four children, the youngest of which dies when young |
| 1821 | Arrives in New Orleans and begins portrait painting as a street vendor; wife and sons join him in December; spends four months at Oakley Plantation in Louisiana |
| 1826 | Leaves for England and gains success quickly; works with William Lizars for a short time, then hires Robert Havell to complete the double elephant folios for <i>The Birds of America</i> |
| 1829-1939 | Travels to the United States and Labrador to continue his study of birds; dines at the White House with President Andrew Jackson; completes the fourth and final volume of the double elephant folio edition of <i>The Birds of America</i> |
| 1839-1848 | Settles in New York and begins work on the royal octavo edition of The Birds of America; travels west to search for specimens for a work entitled <i>The Viviparous Quadrupeds of North America</i> , which was published in 1845 |
| 1848-1851 | Eyesight fails and suffers a stroke; dies in 1851 at the age of 65 |
| 1886 | George Bird Grinnell, a former pupil of Lucy Audubon, founded the first Audubon Society |

Activity 1 What Do You See?

Use a viewing quadrant and field journal to sharpen your observation skills and create a story.

Observation and Discussion Grades K-12, one or more days

Overview

Audubon's <u>The Birds of America</u> prints capture moments in the life drama of the American wilderness. Each of Audubon's visual stories shows the main character(s)—usually birds or animals – in their natural habitat and engaged in a natural activity, whether resting, eating, working, hunting or protecting themselves and their family.

What You Do

- 1. Sharpen your observation skills: Work with a partner or a team to examine Audubon's "Baltimore Oriole" print from his book <u>The Birds of America</u>. Make a color copy of the painting (page 9) and ask each group member to study one part of the painting. Each member should record their observations on a page of their field journal (Field Journal: What Do You See?, page 26).
- 2. In the **Observations** section of the journal page, take notes about the plants, birds or other forms of wildlife as well as colors and actions you see.
- 3. In the **Reflections** section of the page, write any questions or feelings you may have; include what you think is happening or what you think is in the other portions of the print (make inferences and projections).
- 4. **Share Your Observations** with the team to understand the visual story Audubon painted. Discuss the main character(s), lesser character(s) (if any), setting, time and action as well as how you think the story will end.
- **5. Peer Writing.** As a team, write a short story based on your group's observations and thoughts. You may want to illustrate your story. Share with others and/or publish your story.

Teacher Notes: To divide the painting into equal sections, ask each student to make a copy of the viewing quadrant or, if you prefer, cut a color copy of the painting into sections and distribute the sections. For younger students or for a classroom writing project, use a projector to show a large image of the painting. Place the viewing quadrant over each section of the print in turn, allowing time for observations and writing.

Materials

- "Baltimore Oriole" print on page 9, one color copy per group
- Viewing Quadrant on page 10
- Extract from The Birds of America, page 11
- Field Journal: What Do You See? form on page 26, one form per student



Plate: 12 Baltimore Oriole John James Audubon

Havell Edition, circa 1826-1838 "The Birds of America" Hand-colored Aquatint Engravings

This print, of two male orioles and a female (shown clinging to the nest) in a tulip tree (yellow poplar), is from a composition painted in Louisiana in 1822 and completed in 1825. Artist Joseph Mason also worked on the background. Audubon Collection, Louisiana's Old State Capitol Museum of Political History



Viewing Quadrant

A viewing quadrant is used to focus attention on one portion of an image. The quadrant helps the viewer(s) sharpen her or his observation skills.

Directions:

Cut the white sections away from the black image shown below. Place the viewing quadrant over the image you want to study; the quadrant should cover all but one quadrant (or quarter) of the image. When you complete your examination of the first quadrant, rotate the viewing quadrant until you have completed your examination of the entire image.

What is a quadrant?

"Quadrant" is from the Latin word, quadrans. Quadrant refers to one quarter or one fourth of an entire object.

Baltimore Oriole

The following is an extract from John James Audubon's description of the Baltimore Oriole and yellow poplar as printed in the 1840 "First Octavo Edition" of Audubon's <u>The Birds of America</u>. The text is available on the Internet and the National Audubon Society, http://audubon.org/bird/BoA/BOA_index.html.

Family XVI. AGELAINAE. MARSH BLACK-BIRDS.

GENUS IV. ICTERUS, Briss. HANG-NEST.

PLATE CCXVII.--MALE, YOUNG MALE, FEMALE and NEST.

The Baltimore Oriole arrives from the south, perhaps from Mexico, or perhaps from a more distant region, and enters Louisiana as soon as spring commences there. It approaches the planter's house, and searches amongst the surrounding trees for a suitable place in which to settle for the season [...] The choice of a twig being made, the male Oriole becomes extremely conspicuous. He flies to the ground, searches for the longest and driest filaments of the moss, which in that State is known by the name of Spanish beard, and whenever he finds one fit for his purpose, ascends to the favourite spot where the nest is to be, uttering all the while a continued chirrup [...] and is emitted in an angry tone, whenever an enemy approaches, or the bird is accidentally surprised; the sight of a cat or a dog being always likely to produce it. No sooner does he reach the branches, than with bill and claws [... he fastens one end of the moss to a twig [...] and takes up the other end, which he secures also, but to another twig a few inches off, leaving the thread floating the air like a swing, the curve of which is perhaps seven or eight inches from the twigs. The female comes to his assistance with another filament of moss, or perhaps some cotton thread, or other fibrous substance, inspects the work which her mate has done, and immediately commences her operations, placing each thread in a contrary direction to those arranged by her lordly mate, and making the whole cross and recross, so as to form an irregular net-work [...].

The nest has now been woven from the bottom to the top, and so secured that no tempest can carry it off without breaking the branch to which it is suspended [. . .] This nest contains no warming substance, such as wool, cotton, or cloth, but is almost entirely composed of the Spanish moss, interwoven in such a manner that the air can easily pass through it. The parents no doubt are aware of the intense heat which will exist ere long in this part of the world, and moreover take especial care to place their nest on the north-east side of the trees. On the contrary, had they gone as far as Pennsylvania or New York, they would have formed it of the warmest and softest materials, and have placed it in a position which would have left it exposed to the sun's rays; the changes in the weather during the early period of incubation being sometimes so great there, that the bird looks on these precautions as necessary to ensure the life of its brood against intense cold, should it come, while it knows that the heat in these northern latitudes will not be so great as to incommode them [. . .] The female lays from four to six eggs, and in Louisiana frequently rears two broods in a season. The period of incubation is fourteen days. The eggs are about an inch in length, rather broadly ovate, pale brown, dotted, spotted, and tortuously lined with dark brown.

THE TULIP TREE.

LIRIODENDRON TULIPIFERA, Willd., Sp. Plant., vol. ii. p. 1254. Pursh, Flora Americ., p. 332. Mich., Abr. Forest. de l'Amer. Sept., t. iii. p. 202, pl. 5.--*POLYANDRIA POLYGYNIA*, Linn.--*MAGNOLIAE*, Juss.

This tree is one of the most beautiful of those indigenous to the United States, and attains a height of seventy, eighty, or even a hundred feet. The flowers are yellow and bright red, mixed with green, and upwards of three inches in diameter. The leaves are ovate at the base, truncato-bilobate at the end, with one or two lobes on each side, all the lobes acuminate. It is generally distributed, but prefers rich soils. Its bark is smooth on the branches, cracked and fissured on the stems. The wood is yellow, hard, but easily wrought, and is employed for numerous purposes, particularly in the construction of houses, and for charcoal. The Indians often form their canoes of it, for which purpose it is well adapted, the trunk being of great length and diameter, and the wood light. In different parts of the United States, it receives the names of poplar, white wood, and cane wood.

Activity 2 Introduction to Audubon

Embark on a virtual field trip to discover why John James Audubon is considered one of America's most important naturalists and artists.

Observation Grades K-12, one or more days

Overview

John James Audubon explored the American wilderness, studying and painting North American birds in their natural environments. His amazing watercolor prints are filled with action and capture the drama of wilderness life.

Use your computer and Field Journal: Introduction to Audubon form on page 27 to explore the images in the "John James Audubon in Louisiana" digital collection in the LOUISiana Digital Library,

http://louisdl.louislibraries.org/index.php?name=John%20James%20Audubon%20in%20Louisiana. This collection contains watercolor lithograph prints of the birds Audubon painted during his four month stay at the Oakley Plantation in St. Francisville, Louisiana in 1821. Many were later published in various editions of TheBirds of America.

The Audubon prints in this collection are in two different forms: large, loose (double elephant) folios (30" x 40") and the smaller octavo book plates (7" x 11"). Refer to the reading on pages seven and eight for an explanation of each type of print.

What You Do

Explore the prints in the digital collection and record your observations in your field journal. Look for details, action and movement as well as suggested sounds and smells. Select your favorite print and share your thoughts and observations about the print with your class.

Before You Begin

- You will need one page of the Field Journal: Introduction to Audubon form (on page 27) to guide your explorations.
- From the opening page, http://louisdl.louislibraries.org/index.php?name=John%20James%20Audubon%20in %20Louisiana, select "Browse Items in the Collection." A page of thumbnail images will open. Click on one of the images to open a large view of the print. Two images of the print will appear. You can zoom in and enlarge the images to see details. Below each print, there is a list of information about each print. This information is called metadata. You can use information in the metadata to discover facts about the image, including printer and size.
- When you finish viewing an image, use the "back" arrow at the top of your browser page to return to the thumbnails and view another print.
- Find the small, light green "2" located at the top and bottom of the right side of the thumbnail page. Click on the "2" to open the second page of thumbnails and view additional prints.

Activity 3 Neighborhood Naturalist

Take a walking tour and learn about your neighborhood environment and ecology

Observation Grades K-12, one or more days

Overview

As they explored the wilderness, naturalists like John

James Audubon kept field journals in which they recorded their thoughts and made sketches of the objects and scenes they observed. As you tour your neighborhood, take notes about the birds, animals, plants and geographic features you see. You can complete this activity in one day, or you can make your observations over a period of days. To observe a wider variety of birds and animals, vary the time of day that you walk.

What You Need: Bird Watching Tools

Before starting the journey, gather a few simple tools to record your observations.

Basic Tools

- Field journal (page 26 or page 28) to record your observations and sketches
- Pen for writing
- Pencil for sketching

Optional Tools

- Binoculars to bring birds, animals and plants "up close"
- Camera to capture pictures
- Field guide to identify types of birds
- Audio recorder to capture sounds or to record your observations

What You Do Field Journal Tips

- Write the date, location and time of day that you walk
- Be alert and look carefully
- Describe sounds, smells, feelings and sights

Suggestions

- Bring tracing paper to make a rubbing of a tree trunk, a rock or other objects; identify and frame the rubbings and arrange them into a gallery exhibit
- Bring an audio recorder and record the sounds your hear; play the recording a few days later and try to identify the sounds
- Collect leaves, shells, rocks and other objects along your walk; label each as you create a collection or album
- Choose one object or scene from the walk and write a story describing it, telling why
 you chose the object or scene and what you like about it
- When you return home, use a field guide or the Internet to identify the plants, birds and animals you observed
- Use a camera to take pictures; create a poster or multimedia slideshow of your neighborhood plants, birds and animals

Searchable Databases and Field Guides

- eNature.com Online Field Guide, http://enature.com/home
- Birds of North America, http://www.whatbird.com
- United States Department of Agriculture Plants Database, http://plants.usda.gov



Activity 4 Window on the World

Test your observational skills by writing about the drama of life as seen through one window pane. Writing Skills Grade K-12, 50 minutes

Overview

The study of plants, birds and animals in their natural environment requires careful observation and patience. Sharpen your observation skills by concentrating on one small area that is located outside your window. Record your observations and thoughts in a field journal. Use your observations to write a short story about the drama of life as seen through your window. Share your story with your family and friends.

What You Need

- Paper; you may want to use the Field Journal: What Do You See? on page 26 or the Field Notes form on page 28
- Pencil or pen
- Window with panes

What You Do

- Select a window that has panes with dividers and provides a view of nature; select one pane to be frame your viewing area
- 2. Gather a field journal or a few sheets of paper and a pen to record your observations
- 3. Place your chair about four or five feet from the selected window pane and begin your observations; observe your window world for a period of 10 or 15 minutes
- 4. Record your observations, remembering to include movement, behavior, colors, shapes and sizes as well as your thoughts and feelings
- 5. Use your notes to write a short story about life as seen through your window world
- 6. Optional: Turn you short story into an eight-page (simple octavo) accordion fold book, complete with sketches that illustrate your story





Activity 5 Grid Art: Drawing to Scale

Use graph paper to draw an object to scale.

John James Audubon often used a grid to produce accurate life-sized drawings of the birds, plants and animals he drew.

Math Skills: Scale Grades 3-12, 50 minutes

He placed his subject in front of a grid and used the points on the grid to sketch each object exactly to scale.

A grid is a pattern of regularly spaced horizontal and vertical lines forming squares. Each square is used as a reference for locating points in drawings or maps. Graph paper, a common form of grid, is printed with a design of small squares of equal size. When an object is placed in front of a grid or on a piece of graph paper, the lines can be used to duplicate, reduce or enlarge the object.

What You Need

- Two sheets of graph paper
- Object to sketch (object should fit on the graph paper)
- Pencil
- Table

What You Do

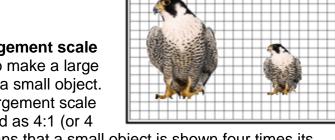
- Place the table against a wall
- Place the selected object on the table and near the wall
- Tape one piece of graph paper to the wall behind the object; you will use the second piece of graph paper for your sketch
- Be seated in front of the object so that your eyes are level with the object
- Sketch the object, using the lines and squares on the graph paper to produce a lifesized drawing of the object

For Math Masterminds

A **reduction scale** is used to make a small image of a large object. The reduction scale expressed as 1:4 (or 1 to 4) means that a large object is shown reduced to one fourth of its actual size.



An enlargement scale is used to make a large image of a small object. The enlargement scale expressed as 4:1 (or 4



to 1) means that a small object is shown four times its actual size.

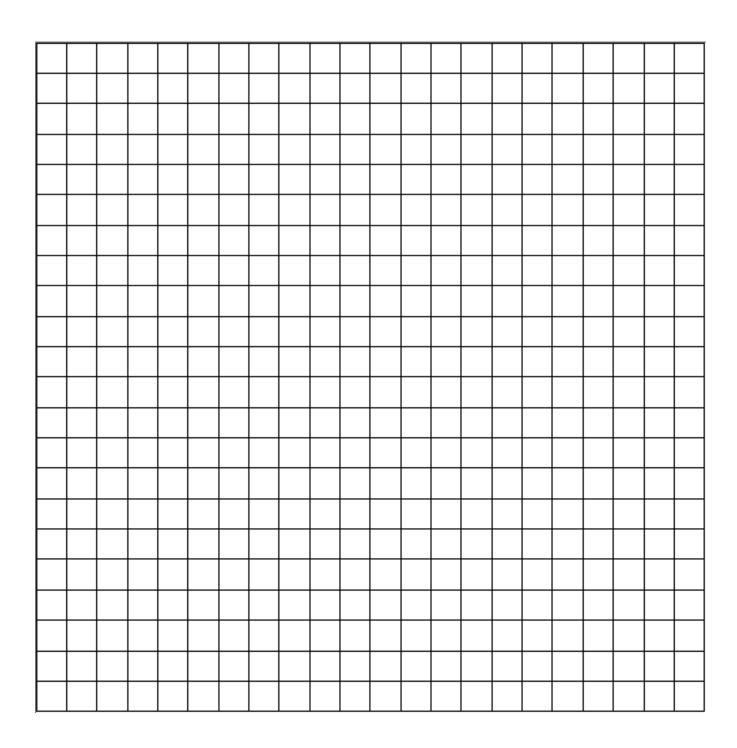
Activity: Use graph paper and a little math to enlarge or reduce the size of your object.

Reduction

Scale

Graph Paper Grid

| Name | Date |
|------|------|
| | |



Activity 6 The Art of Printing

Use a simplified aquatint style of print making to create a print from an original work of art.

Art Skills: Print Making Grade K-12, 50 minutes

Overview

Master engraver Robert Havell used a print making method called aquatint to produce Audubon's <u>The Birds of America</u>. The aquatint process involves engraving a reverse image of an object onto a copper plate. The plate is then inked and a dampened sheet of paper is placed over the plate. The plate is pressed or rolled so that the paper is forced into the lines of the engraving. Once the paper is inked, it is removed from the plate. The resulting black and white print is then hand colored by artists. You can use a simplified version of the aquatint process to produce a print.

What You Need

- Rags, sponges or paper towels to clean the printing plate
- Paper, for sketching and for printing
- Foam board or Styrofoam plate for etching
- Sharpened pencil for etching the foam board or Styrofoam plate
- Soft rubber brayer (ink roller); you can also use a small paint roller
- Water-based block printing ink or thick water-based paint
- Water color pencils or paint in a variety of colors
- Large wooden spoon to use as a baren
- Newspapers
- Old cookie tray or inexpensive paint tray to ink the brayer

What You Do

Copy Audubon's naturalist style by choosing a bird or animal to draw; you may wish to include background objects such as plants or insects.

- Sketch your subject on a sheet of paper to produce an engraving/etching pattern
- Place the sketched pattern on top of the foam board or Styrofoam plate and, using a sharpened pencil, trace your sketch into the foam board or Styrofoam plate
- Before you begin inking, cover your work area with newspaper
- Place a small amount of ink or paint on the cookie tray or paint tray
- Roll the brayer or paint roller both ways to allow the roller to evenly pick up the ink
- Once the brayer is "inked", roll it onto the printing plate, making certain the etched lines are filled with ink
- Use rags or paper towels to wipe the excess ink from the surface of the foam board or Styrofoam plate, being careful to leave the ink in the etched lines of the plate
- Place a piece of paper on the printing plate, being careful not to slide the paper across the plate
- Rub the large wooden spoon lightly over the surface of the paper to imprint the ink from the etched lines of the plate
- Remove the paper and repeat the process for more prints
- Once the paper dries, use colored pencils or water colors to hand color your prints



Baren, used to rub the inked engraving onto paper



Brayers, used to ink the plate

Activity 7 Great Americans in the Age of Audubon

Prepare a multimedia presentation about one of the great Americans Audubon encountered in his life.

Social Studies Grade 3-12, two 50-minute classes

Overview

Audubon's life spanned one of the most remarkable periods of American history. Arriving in America in 1803, Audubon witnessed many significant events that shaped the young United States, including the Louisiana Purchase and the War of 1812. Through his journeys, Audubon was fortunate to meet many of the men who shaped this period of American history including:

- American artists Titian and Rembrandt Peale, John Vanderlyn, Thomas Sully and Thomas Cole, the founder of the Hudson River School of art
- American presidents James Monroe, Andrew Jackson and Martin van Buren
- Thomas Nuttall, one of the most adventurous of the early
- Revolutionary War hero George Rogers Clark
- William Clark and Toussaint Charbonneau, famed explorers of the Louisiana Territory
- Red Jacket, Seneca chief and orator to whom President George Washington awarded the Medal of Honor

- Washington Irving, American author best known for his short stories "The Legend of Sleepy Hollow" and "Rip Van Winkle"
- Sam Houston, President of the Texas Republic
- Bernard de Marigny, whose New Orleans home was used as Andrew Jackson's headquarters in 1814
- English author Sir Walter Scott, whose novels, according to Mark Twain, shaped Southern antebellum culture and "made every gentleman in the South a Major or a Colonel, or a General or a Judge"

What You Do

Research one or more of the leaders listed above. Prepare a multimedia and oral presentation that:

- Provides a brief background of the person or people
- Provides insight into their personality, including their leadership traits
- Explains their major accomplishments or contributions
- Explains their importance to American or world history
- Comments on the individual's importance to the modern world (if any)
- Explains why you chose to research the individual
- Includes your opinion of the person and his accomplishments
- Includes a bibliography of your sources (suggestion: include at least one reputable text and one reputable Web site in your sources)

Note: Refer to the Multimedia Presentation Rubric (page 29) and Essay Rubric (page 30) for presentation guidelines.

Activity 8 Habitat Science Projects

Investigate the birds and wildlife Audubon painted during the four months he lived at Oakley Plantation in St. Francisville, Louisiana.

Science Projects Grade 5-12, two 50-minute classes

Overview

In 1821, John James Audubon was hired to teach drawing to Miss Eliza Pirrie, daughter of Mr. and Mrs. James Pirrie, owners of Oakley Plantation. While there, he completed or began 32 bird paintings. Following a disagreement with Mrs. Pirrie, Audubon departed Oakley for New Orleans – only four months after his arrival. The digital collection entitled "John James Audubon in Louisiana" contains hand-colored lithographs and engravings, many of which were published in Audubon's <u>The Birds of America</u>. As with most of Audubon's paintings, the images present a dramatic look at birds in their natural environment. Audubon's backgrounds include native plants as well as insects, reptiles and mammals that are part of the birds' natural habitat.

COLLABORATIVE PROJECTS

1. Organize and Illustrate an Informational Book about Audubon's Birds and Plants

Grade 3-12

Two or three 50-minute class periods

Work with a partner to investigate the plants and birds that Audubon sketched during his four months in Louisiana. Use the images and information contained in the "John James Audubon in Louisiana" digital collection,

http://louisdl.louislibraries.org/index.php?name=John%20James%20Audubon%20in%20Louisiana, to produce an illustrated, informative book about four birds and four plants/trees shown in the digital collection. As you explore the images, record important information in your field or research journal (see field journal forms on pages 25-28). Next, use reputable Internet and text sources to locate the following information:

Birds

- Scientific name
- Common name
- Color of male and female
- Size of male and female
- Foods they eat
- Color of eggs
- Nesting habits
- Environment or area where they are usually found
- Interesting facts
- Explain why you chose to research it
- Include whether or not you have seen a live specimen of the bird

Plants

- Scientific name
- Common name
- Color of plant/tree
- How it reproduces
- Color and shape of flower, seeds, etc
- If it serves as a wildlife or human food source
- If it is evergreen or deciduous
- Environment or area in which it is usually found
- Interesting facts
- Explain why you chose to research it
- Include whether or not you have seen a live specimen of the plant/tree

2. Botany Scrapbook

Grades 2-12

Two 50-minute class periods to organize and present the projects as well as three or four days to observe and collect samples

Botany scrapbook directions: Explore the images of plants and trees in the "John James Audubon in Louisiana" digital collection,

http://louisdl.louislibraries.org/index.php?name=John%20James%20Audubon%20in%20Louisiana. Record their scientific and common names in your field or research notebook. Using your list, search your backyard or neighborhood for examples of as many of the plants/trees as you can find. Create a botany scrapbook collection using leaves, flowers, needles, etc. from the different types of plants/trees you identify. While gathering a sample of each plant, take care not to damage the plants. Label each specimen by including the scientific and common name as well as two important facts about each plant/tree.

3. Ornithology Scrapbook

Grades 4-12

Two 50-minute class periods to organize and present the projects as well

Ornithology scrapbook directions: Follow the guidelines for the Botany Scrapbook, but instead of collecting samples of birds, use a camera to take photos of the types of birds that are shown in the "John James Audubon in Louisiana" digital collection. Use your images to create an ornithology scrapbook. Label each specimen by including the scientific and common name as well as two important facts about each bird.

4. Informational Video: Audubon's Wildlife and Habitats

Grades 7-12

Three 50-minute class periods to organize and present the projects as well as four or five days to observe, collect, organize and present findings

Informational Video Directions and Scenario: You are part of a team of three investigative scientists. Your team assignment is to produce an informational video production about the wildlife and environment that Audubon encountered on his 1821 journey through Louisiana. The finished product must be a "stand alone" item that presents the required information (see Research Essentials on page 21 and Project Steps on page 22) to the viewer without assistance from the authors.

Your research and production team must include one ornithologist (scientist who studies birds) and one botanist (scientist who studies plants). Since Audubon's prints contain fewer examples of other types of wildlife, the third scientist in your team will specialize in **any two** of the job descriptions listed on page 21. For recording your notes, you may want to use the field journal forms on page 25-28.

Job Descriptions

- ecologist a scientist who studies the relationship between living things and their environment
- entomologist a scientist who studies insects
- herpetologist a scientist who studies snakes
- mammalologist a scientist who studies mammals
- carcinologist a scientist who studies crustaceans

Research Essentials for Each Scientist

Each member of the group should select any four of Audubon's specimens to examine in depth. The plants, animals and birds selected by group members do not have to come from the same plates. For each, include the following information:

Ornithologist (Birds) (examine four types):

- Scientific name
- Common name
- Color of male and female
- Size of male and female
- Foods they eat
- Color of eggs
- Nesting habits
- Environment or area where they are usually found
- Interesting facts
- Why you chose to research it
- If you have seen a live specimen of the bird

Botanist (Plants) (examine four types):

- Scientific name
- Common name
- Color of plant/tree
- How it reproduces
- Color and shape of flower, seeds, etc
- If it serves as a wildlife or human food source
- If it is evergreen or deciduous
- Environment or area in which it is usually found
- Interesting facts
- Why you chose to research it
- If you have seen a live specimen of the plant/tree

Other (select two of the remaining fields):

Examine any four specimens from the two fields in which you choose to specialize. You must have at least one representative specimen from each of the two fields. Include the following information:

- Scientific name
- Common name
- Color of male and female
- Size of male and female
- Foods they eat
- How they reproduce/nesting habits
- Environment or area where they are usually found
- Interesting facts
- Why you chose to research it
- If you have seen a live specimen of the subject

Project Steps

- Select your field(s)
- Examine the plates in the "John James Audubon in Louisiana" digital collection, http://louisdl.louislibraries.org/index.php?name=John%20James%20Audubon%20in%20Louisiana.
- Select four specimens to examine in depth
- Use the Audubon collection as well as reliable text and Internet sources to research your specimens; record information in your field or research journal
- Collect images to illustrate your data
- Compile your report
- Confer with group members to organize, plan and construct your production visual
- Use the guidelines in the Multimedia Presentation Rubric on page 28 to polish your final product
- Include an informed commentary on how Audubon's birds, plants and animals interact within their natural habitat

Note: Images in the John James Audubon in Louisiana digital collection are part of the E.A. McIlhenny Natural History Collection and are available for public viewing and study courtesy of Louisiana State University Libraries, Special Collections, www.lib.lsu.edu.

Vocabulary John James Audubon, American Naturalist

| Name | Date |
|-------------|------|
| aquatint | |
| engrave | |
| environment | |
| folio | |
| grid | |
| habitat | |
| lithography | |
| migratory | |
| naturalist | |
| octavo | |
| ornithology | |
| privateer | |
| replica | |
| | |

Vocabulary John James Audubon, American Naturalist

aquatint an early print making technique in which dampened paper is pressed

against engraved and inked copper plates to produce a print

engrave to carve, cut or etch into a material

environment the surroundings in which a person, animal or plant lives

folio a large sheet of paper folded once in the middle, making two leaves or

four pages of a book or manuscript

grid a network of crossing parallel lines on a map, plan, or graph paper for

locating points

habitat the area or environment where an organism or ecological community

normally lives or occurs

lithography a method of printing from a metal or stone surface on which the

printing areas are made ink-receptive

migratory traveling from one place to another at regular times of year, often over

long distances

naturalist a person who specializes in natural history, especially in the study of

plants and animals in their natural surroundings

octavo a book size resulting from folding a sheet of paper of a standard size to

form eight leaves

ornithology the branch of zoology that deals with the study of birds

privateer a privately owned armed vessel authorized by the government to take

part in a war

replica a copy or reproduction of a work of art, especially one made by the

original artist

| Field Journal of | |
|--|--|
| Subject: <u>Exploration of Audubon's The Birds of America Prints</u> | |
| Date | |
| | |

| Field Journal: What Do You See? Name Date | | | | |
|---|--|--|--|--|
| Observations | Reflections | | | |
| Title of print, photo, painting, etc | Questions and Notes | | | |
| Artist's name What Do You See? wildlife, objects, shapes, colors, physical features, action Birds: | | | | |
| Animals: | | | | |
| Plants: | What action do you think you see? (movement, wind, etc.) | | | |
| Other: (Insects, snakes, etc) | | | | |
| What action do you see? | What do you think you will see in the other sections of the image? | | | |
| Notes: | | | | |

Field Journal: Introduction to Audubon Name Date 1. Locate and name one print that is an example of Audubon's large "double elephant" edition. 2. Locate and name one print that is an octavo plate. 3. Find one image that was printed and engraved by Robert Havell._____ 4. Find one image that was printed and engraved by William Lizars. 5. Why did Audubon use two different printers/engravers? See page seven of the reading for help.___ 6. Name five different types of birds that Audubon painted. 7. Besides birds, can you find four different types of wildlife in Audubon's paintings? List the four that you find. 8. Can you find four different types of plants or trees that you know? Name them. 9. Can you find a plant that grows in your yard or school yard? Name one. _____ 10. What do you like or dislike about Audubon's prints? 11. Which is your favorite print? Why? _____ 12. Which print do you like least? Why? _____ 13. Select one print that shows drama and action. Describe the drama you see. 14. Why do you think so many people still like Audubon's prints?

| Field Notes Name Date | |
|------------------------|----------|
| Objective: | |
| Field Notes: | |
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Multimedia Presentation Rubric

| Name | Date |
|------------------|--------|
| Grading Criteria | Points |

| Content | Content 5 4 | | 3 | 2 | 1 | |
|--------------------------------|--|---|---|---|--|--|
| Accurate and Relevant Facts | Contains at least 2 accurate pieces of information for each required heading (5 pts) | | Contains 3, accurate | Contains 2, accurate | Contains 1, accurate | |
| Significance of Information | Facts are accurate and significant for all entries (5pts) | curate and accurate; ificant for all most info is | | Some facts are accurate; some info is significant | Much important information is lacking | |
| Pictures or Graphics | Contains at least 4 accurate/relevant | Contains 2, | | | Contains 1, accurate | |
| Spelling | No errors | | | 1-2 errors | 3 or more errors | |
| Grammar/Style | No errors | | | 1-2 errors | 3 or more errors | |
| Organization | I and easy to I | | Average organization | | Lacks organization, direction or purpose | |
| Required Number of Items | Contains, but does not exceed, required number of items | | | | Contains fewer than required items | |
| Title Page | Contains title group members' names, date | | | Title slide information incomplete | No information given | |
| Visual Appeal | Colors and graphic design complements information and does not detract from audience's engagement with historical information. Poster/pamphlet display makes use of all available room. (5 pts) | | Colors/graphs are visually appealing, but detract from audience's engagement with information (3 pts) | | Little attention given to graphic design or use of available space | |

Essay Rubric

| Name | Date |
|------|------|

| Score | Characteristics | | | | | |
|-----------|--|--|--|--|--|--|
| | makes an appropriate response to the topic; | | | | | |
| 5 | imaginative and fully developed ideas; | | | | | |
| (highest) | organizes details clearly; | | | | | |
| | sustains strong point of view; | | | | | |
| | highly original; | | | | | |
| | clear sentence sense, variety and transitions; | | | | | |
| | shows superior command of language structure and vocabulary; | | | | | |
| | shows superior grasp of spelling and mechanics | | | | | |
| | makes an appropriate response to the topic; | | | | | |
| 4 | attempts to develop ideas; | | | | | |
| 4 | organization is evident, generally focused; | | | | | |
| | some use of point of view; | | | | | |
| | somewhat original; | | | | | |
| | some sentence variety; few fragments or run-ons, some transitions; | | | | | |
| | grade level vocabulary; and an allian and mach arisel arrange. | | | | | |
| | some spelling and mechanical errors Attempts to make an appropriate reasonable to the tenion. | | | | | |
| | attempts to make an appropriate response to the topic; | | | | | |
| 3 | attempts to communicate ideas; acmo organization, but may lose feeue: | | | | | |
| | some organization, but may lose focus;emerging point of view; | | | | | |
| | somewhat original; | | | | | |
| | many simple sentences, fragments and run-ons; few transitions; | | | | | |
| | ordinary vocabulary; | | | | | |
| | many noticeable spelling and mechanical errors | | | | | |
| | somewhat attempts to make an appropriate response to the topic; | | | | | |
| | Ilmited development of ideas; | | | | | |
| 2 | inconsistent organization; | | | | | |
| | point of view not apparent; | | | | | |
| | originality not evident; | | | | | |
| | simple sentences; many fragments and run-ons, no transitions; | | | | | |
| | ineffective vocabulary; | | | | | |
| | mechanics and spelling errors interfere with reading/meaning | | | | | |
| | lacks appropriate response to the topic; | | | | | |
| | undeveloped ideas; | | | | | |
| 1 | lacks organization; | | | | | |
| (please | point of view not apparent; | | | | | |
| rewrite) | originality not evident; | | | | | |
| | unclear sentence structure; | | | | | |
| | ineffective vocabulary; | | | | | |
| | mechanics and spelling errors interfere with reading/meaning | | | | | |

Louisiana Department of Education Content Standards

| | Language | Math | Science | Social Studies | Art | K-12 Basic Literacy Skills |
|---|---|---|---|--|---|--|
| What Do You See? K-12 Introduction to Audubon K-12 | Reading and Responding ELA-1-E1 ELA-7-E3 ELA-1-M1 ELA-7-M3 ELA-1-H1 ELA-7-H3 Writing ELA-2-E1 ELA-2-E2 ELA-2-E3 ELA-2-E6 ELA-2-M1 ELA-2-M1 ELA-2-M3 ELA-2-M3 ELA-2-M6 ELA-2-M6 | | Science as Inquiry PK-CS-I1 SI-E-A1 PK-CS-I4 SI-E-A4 S1-E-A1 SI-E-A3 SI-M-A3 SI-H-A3 Science and the Environment SE-E-A3 SE-M-A3 SE-H-A7 SE-H-A10 Life Science PK-CS-L1 LS-E-C1 LS-E-A2 LS-E-A4 LS-E-C1 LS-E-C2 | Historical Thinking Skills H-1A-E1 H-1A-E2 H-1A-E3 H-1A-M2 H-1A-M3 H-1A-M5 H-1A-M6 H-1A-H3 H-1A-H4 H-1A-H2 H-1A-H6 | | The following skills extend across grades and the curriculum Foundation Skills Communication |
| Neighborhood Naturalist K-12 | | | | | Visual Arts VA-CE-E1 VA-CE-E4 VA-CE-E6 VA-CE-E7 VA-CE-E1 VA-CE-E4 VA-CE-M6 VA-CE-M7 | Problem Solving Resource Access and Utilization Linking and Generating Knowledge Literacy Model for Lifelong Learning |
| Window on the World Grades K-12 | ELA-2-H2 ELA-2-H3 ELA-2-H6 | | LS-M-C3 | | VA-CE-H1 VA-CE-H4 VA-CE-H6 | Defining and FocusingSelecting Tools and |
| Grid Art: Scale Grades 3-12 | Writing and Proof Reading ELA-3-E1 ELA-3-E2 ELA-3-E3 ELA-3-E4 ELA-3-M1 ELA-3-M2 ELA-3-M3 ELA-3-M4 | Number and Number Relations N-8-M N-6-H Measurement M-4-H | Science as Inquiry SI-E-A5 SI-E-B4 SI-M-A5 | | VA-CE-H7 | Resources Extracting and Recording Processing Information Organizing information Presenting Findings Evaluating Efforts |
| Art of Printing Grades K-12 | ELA-3-H1 ELA-3-H2 ELA-3-H3 ELA-3-H4 | | | | | |
| Great Americans in the Age of Audubon Grades 3-12 | Speaking and Listening ELA-4-E2 ELA-4-M2 | | | Historical Thinking Skills H-1A-E1 H-1A-E2 | | |
| Habitat Projects Grades 5-12 | Information Resources ELA-5-E2 ELA-5-E4 ELA-4-M2 ELA-4-M4 ELA-5-H2 ELA-4-H4 | | Science as Inquiry PK-CS-I1 SI-E-A1 PK-CS-I4 SI-E-A4 S1-E-A1 SI-E-A3 SI-M-A3 Science and the Environment SE-E-A3 SE-M-A3 SE-H-A7 SE-H-A10 Life Science PK-CS-L1 LS-E-C1 LS-E-A2 LS-E-A4 LS-E-C1 LS-E-C2 LS-M-C3 | H-1A-E3 H-1A-M2 H-1A-M3 H-1A-M5 H-1A-M6 H-1A-H3 H-1A-H2 H-1A-H4 H-1A-H6 | | |

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- Streshinsky, Shirley. <u>Audubon: Life and Art in the American Wilderness</u>. Villard Books, New York, 1993.

Suggested K-12 Readings

- The Boy Who Drew Birds: A Story of John James Audubon by Jacqueline Davies (Outstanding Science Trade Books for Students K-12 Award)
- Into the Woods: John James Audubon Lives His Dream by Robert Burleigh
- <u>John James Audubon: Wildlife Artist</u> (First Books American Conservationists Series) by Peter Anderson

Web sites to Explore

- American Eden: Landscape Paintings of the Hudson River School from the Collection of the Wadsworth Atheneum Museum of Art, <u>www.tfaoi.com/aa/4aa/4aa360.htm</u>
- Bird Source, http://www.birdsource.org/
- Discovering Lewis and Clark, http://www.lewis-clark.org
- Electronic Resources on Ornithology, http://www.chebucto.ns.ca/Environment/NHR/bird.html
- John James Audubon: Drawn from Nature,
 - www.pbs.org/wnet/americanmasters/episodes/john-james-audubon/introduction/106
- John James Audubon in Louisiana, http://louisdl.louislibraries.org/index.php?name=John%20James%20Audubon%20in%20Louisiana
- The Audubon Society, www.audubon.org

